PRODUCTION OF COENZYME Q₁₀ FROM CRUDE PALM OIL

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rude palm oil (CPO) consists of a bouquet of phytonutrients which are beneficial to health and well-being. Among the phytonutrients present in palm oil is the coenzyme Q₁₀ (Figure 1) or ubiquinone. Coenzyme Q₁₀ is present in CPO in the range of 10–80 ppm (Hamid *et al.*, 1995; Tay and Choo, 2000).

The relatively higher amount of carotenes and vitamin E in CPO often mask the presence of coenzyme Q_{10} . Thus, special technique is needed to extract and purify this valuable compound. In our present patented process, high purity (80%) coenzyme Q_{10} with more than 70% recovery is produced.

Molecular structure of coenzyme Q_{10}

PRODUCTION TECHNOLOGY

The production of coenzyme Q_{10} from CPO consists of a few steps as depicted in *Figure 2*.

i. Conversion of CPO into methyl esters (for oleochemical/biodiesel applications) and removal of methyl esters to produce palm phytonutrients concentrate containing coenzyme Q_{10}



Figure 1.

- ii. Isolation of coenzyme Q_{10} , carotenes and vitamin E from phytonutrients concentrate.
- iii. Purification of coenzyme Q_{10} .

IMPORTANCE OF COENZYME Q_{10}

Coenzyme Q_{10} is a natural compound in human's body. It is a potent antioxidant where it helps in combating the ageing process (Mellons and Tappel, 1996; Beyer, 1989). It was also reported that coenzyme Q_{10} helps in angina relieves. Angina is the pain or discomfort experienced when there is a lack of blood in the heart. In addition, coenzyme Q_{10} is also responsible in boosting the body's immune system as well as lowering high blood pressure and lower the risk of heart attack (Lenaz, 1985; Yamamura, 1985).





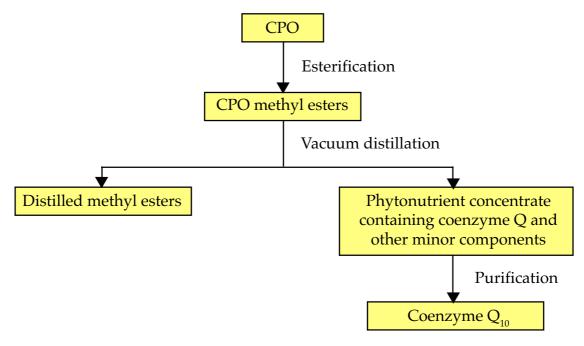


Figure 2. Production of coenzyme Q_{10} from crude palm oil (CPO).

COMMERCIALIZATION

Coenzyme Q_{10} with nutritional attributes can be produced in high purity (>80%) using MPOB patented process. With this process, carotenes and vitamin E can also be produced.

PATENT

Method for Isolation and Recovery of Individual Carotenes, Individual Sterols, Coenzyme Q, Coenzyme Q_{10} and Alpha Tocomonoenol. (PI20040486)

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